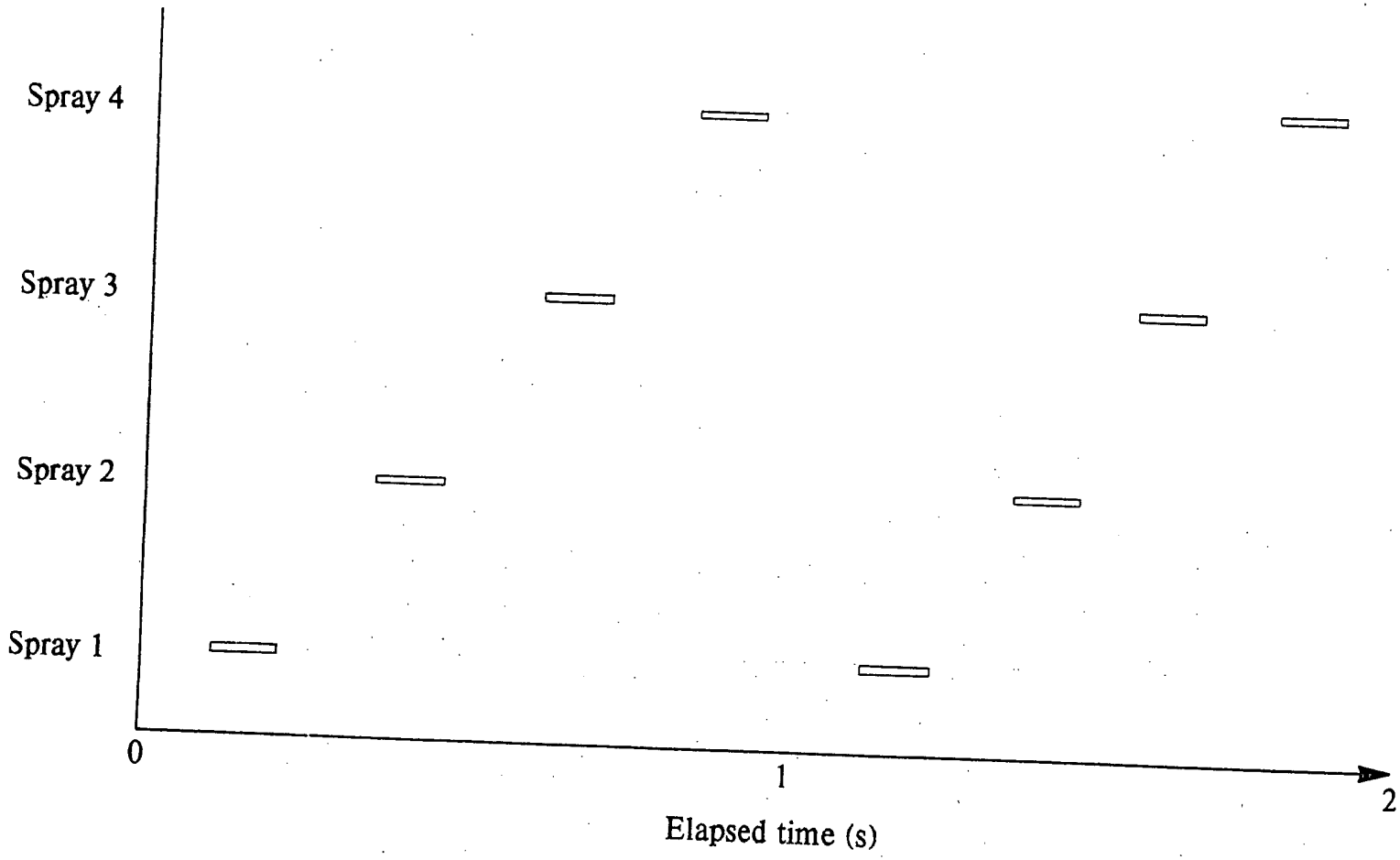


FIG. 1
PRIOR ART

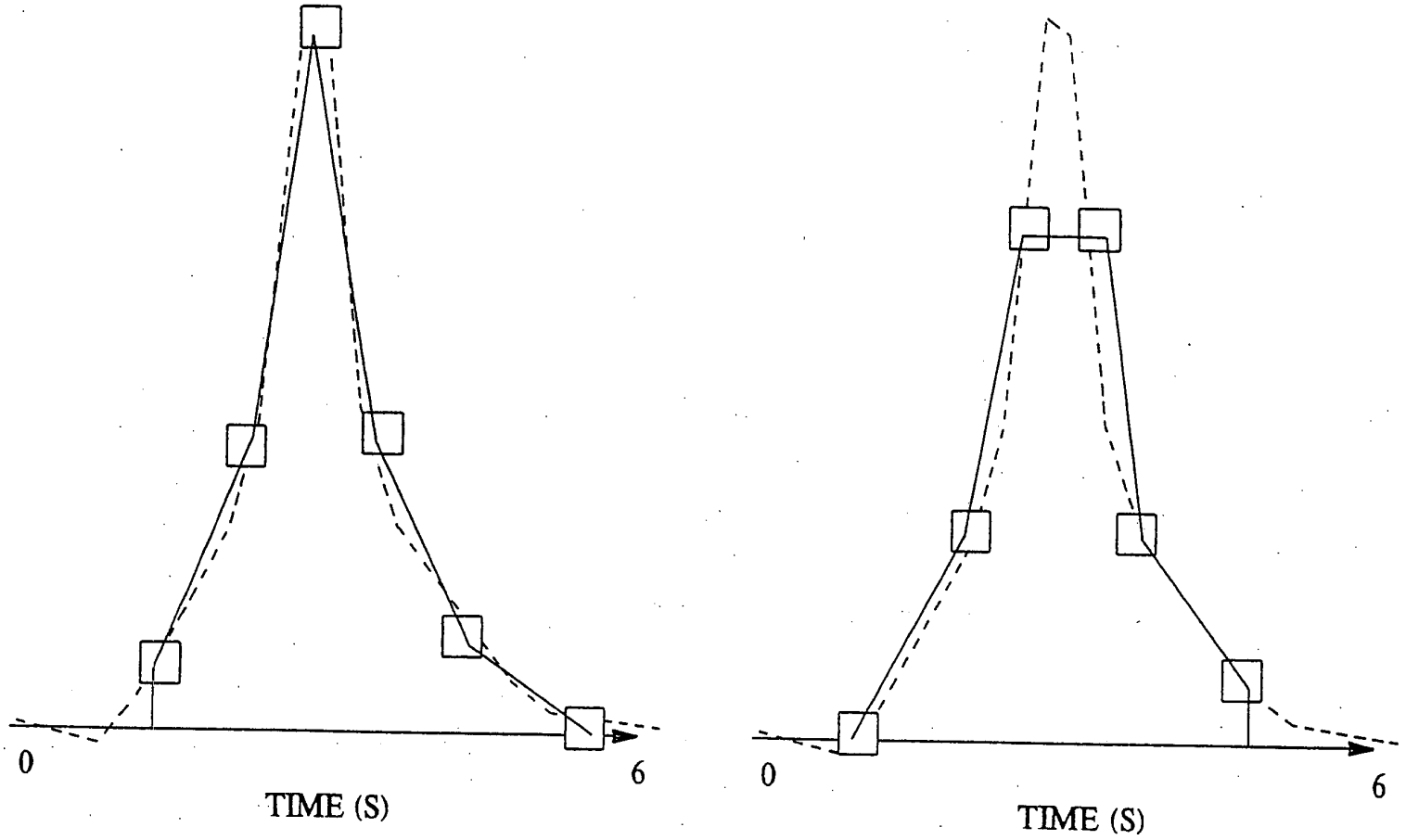


FIG. 2
PRIOR ART

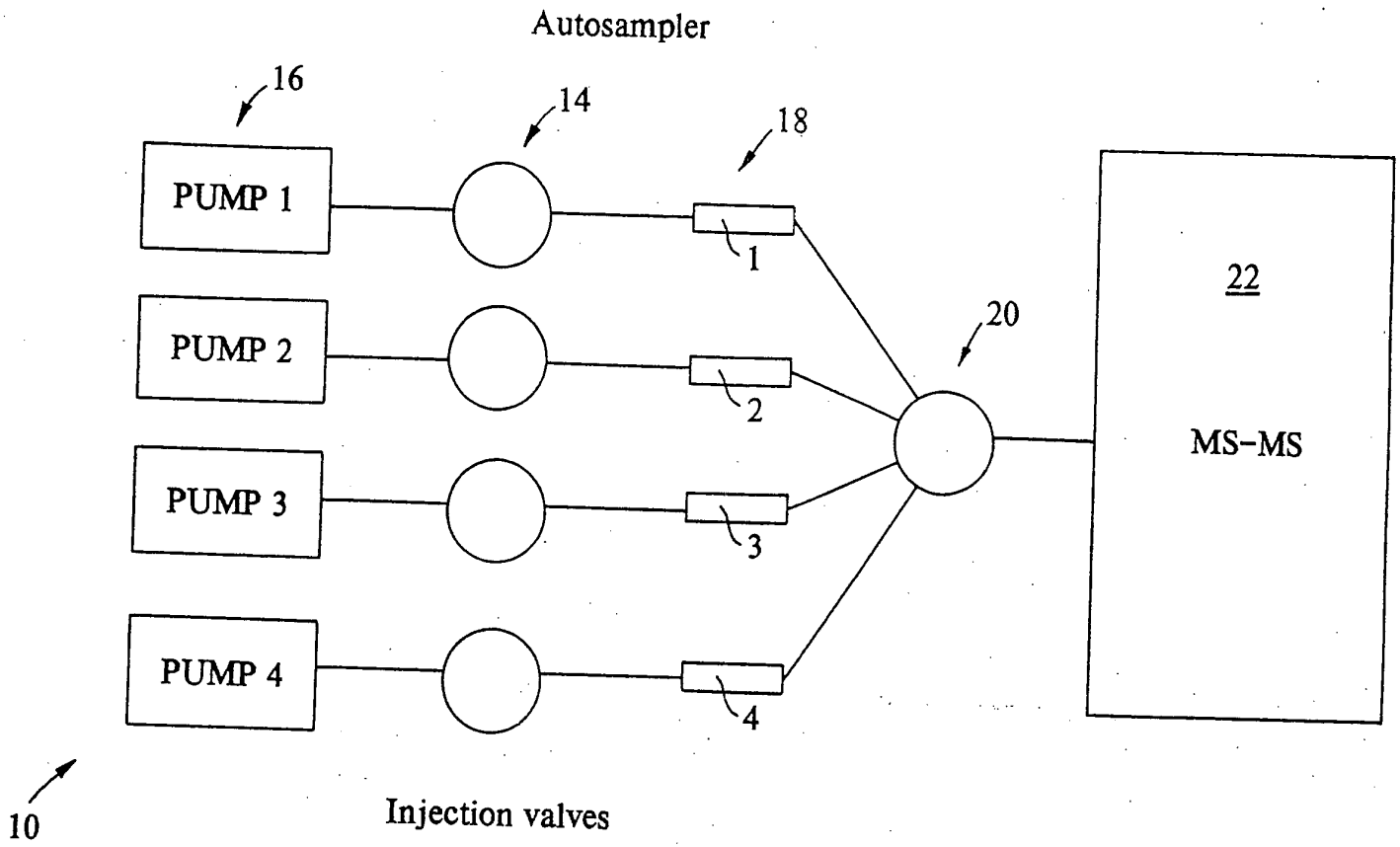

Autosampler
16
14
18
PUMP 1
PUMP 2
PUMP 3
PUMP 4
1
2
3
4
20
22
MS-MS
10
Injection valves

FIG. 3

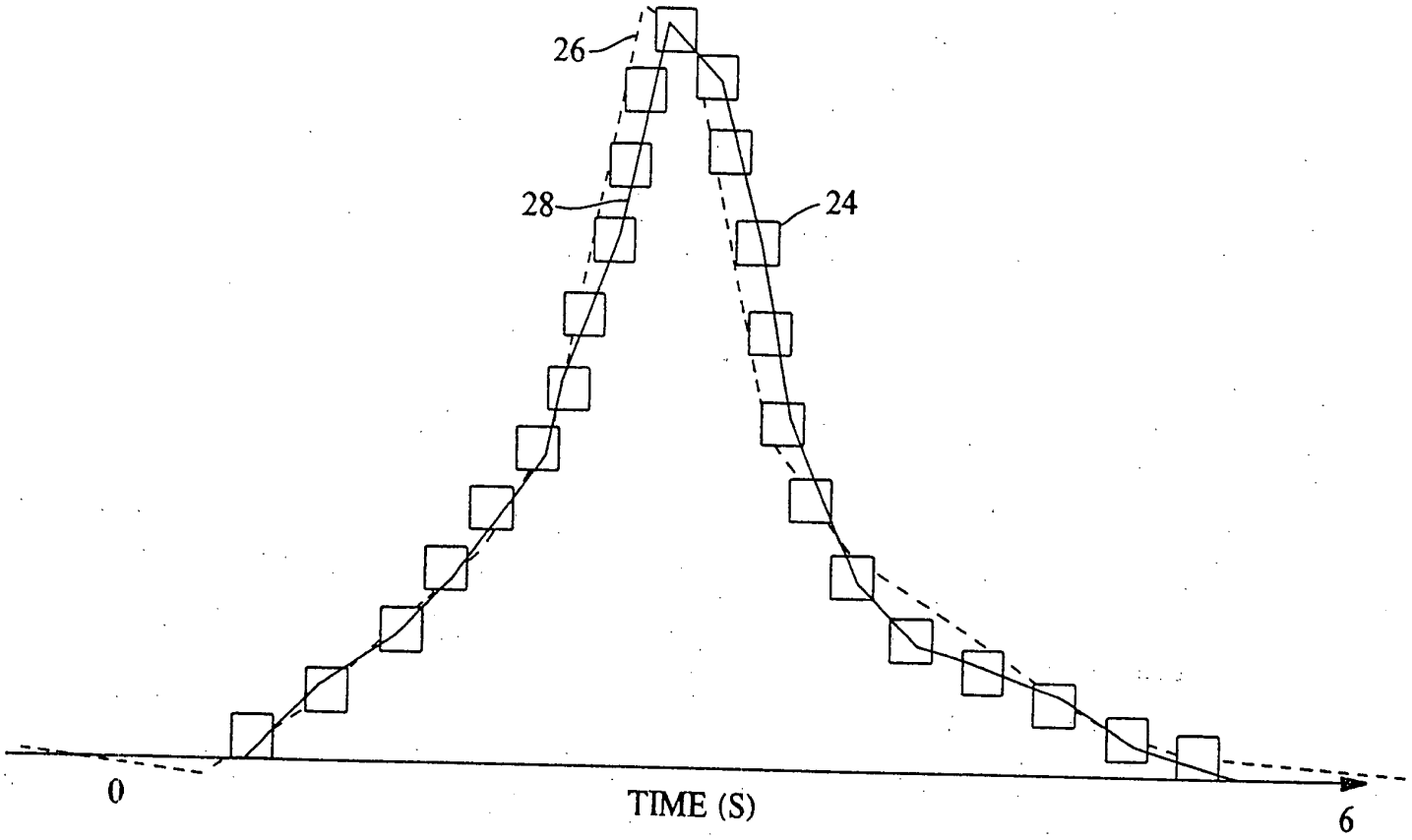
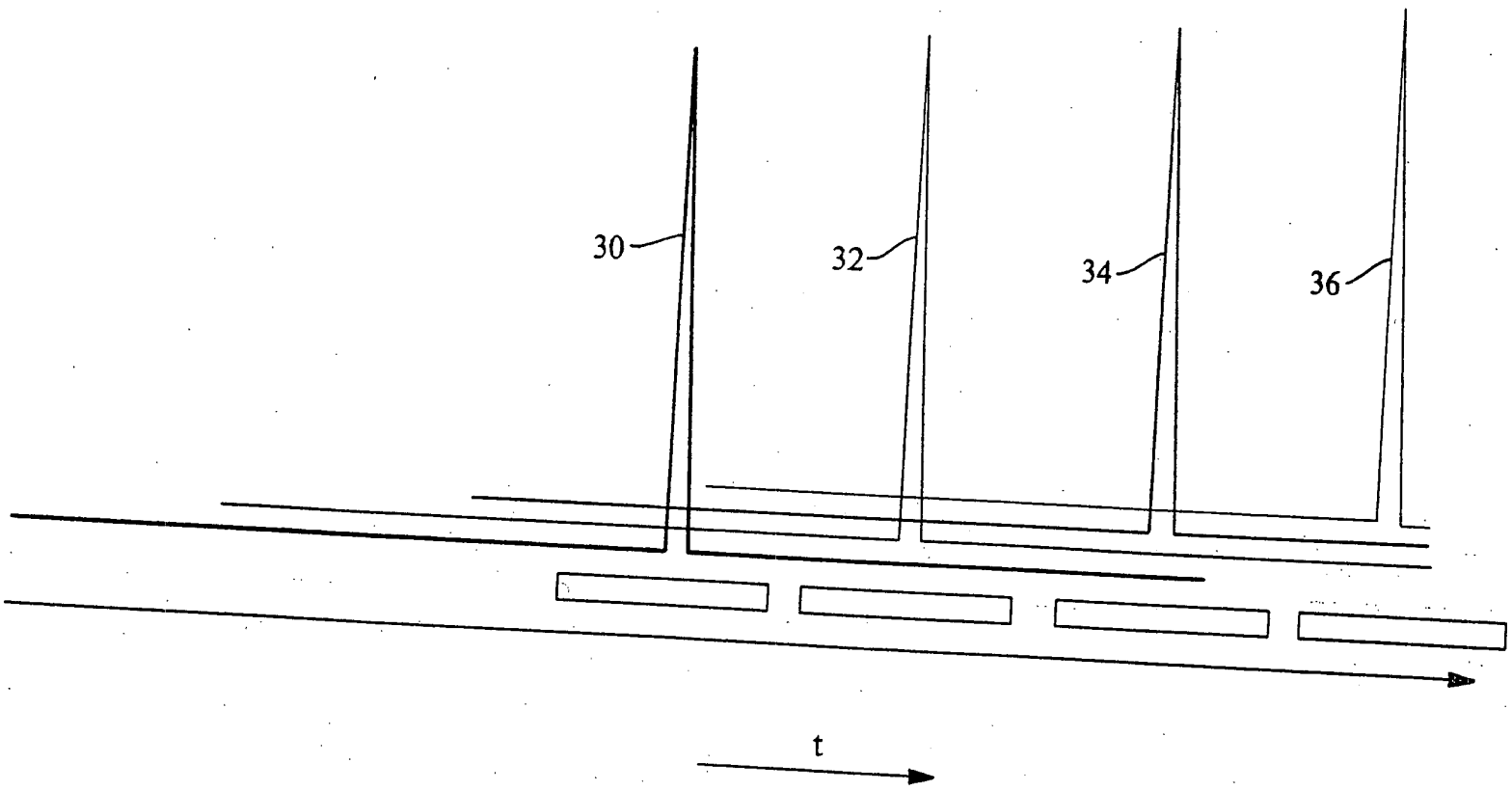


FIG. 4



Staggered starts synchronized with the detector

FIG. 5

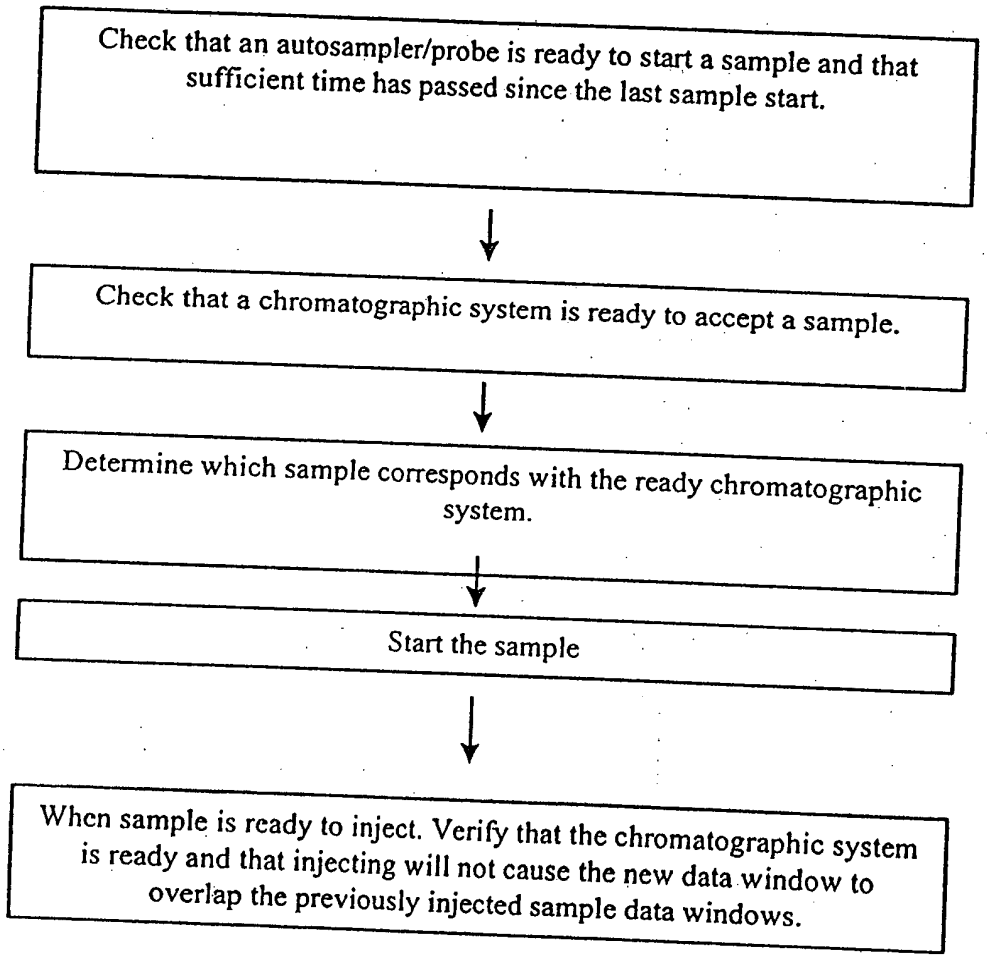

Check that an autosampler/probe is ready to start a sample and that sufficient time has passed since the last sample start.
Check that a chromatographic system is ready to accept a sample.
Determine which sample corresponds with the ready chromatographic system.
Start the sample
When sample is ready to inject. Verify that the chromatographic system is ready and that injecting will not cause the new data window to overlap the previously injected sample data windows.

FIG. 6

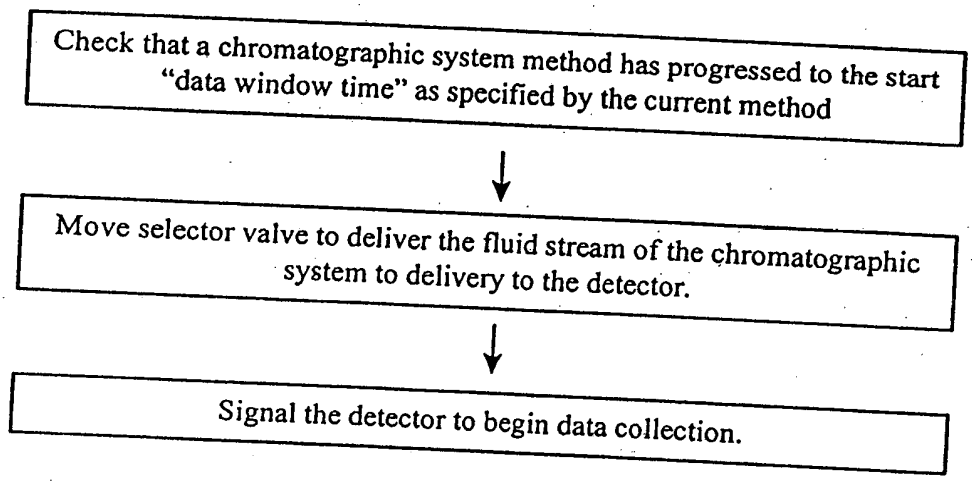

Check that a chromatographic system method has progressed to the start "data window time" as specified by the current method
Move selector valve to deliver the fluid stream of the chromatographic system to delivery to the detector.
Signal the detector to begin data collection.

FIG. 7

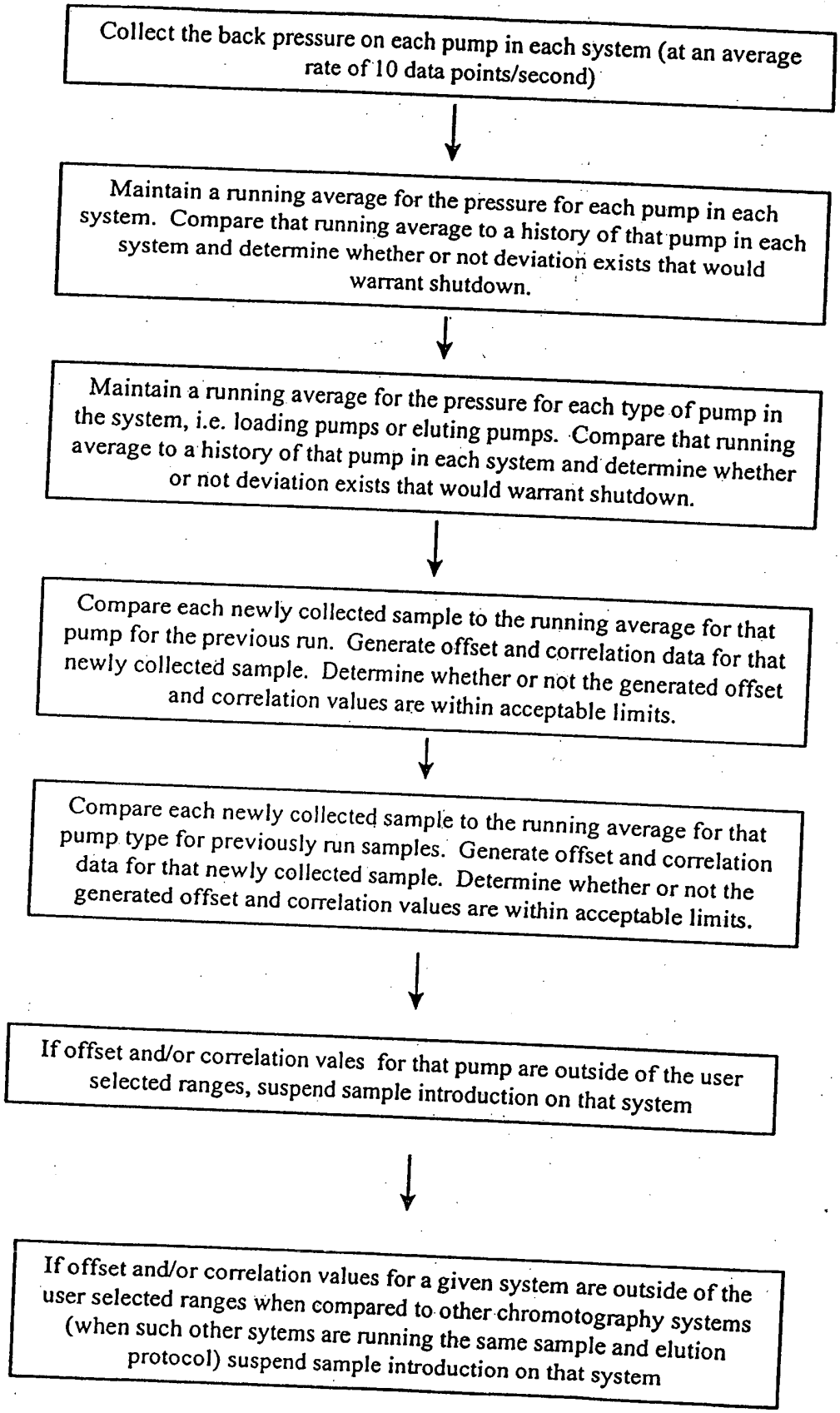

Collect the back pressure on each pump in each system (at an average rate of 10 data points/second)
Maintain a running average for the pressure for each pump in each system. Compare that running average to a history of that pump in each system and determine whether or not deviation exists that would warrant shutdown.
Maintain a running average for the pressure for each type of pump in the system, i.e. loading pumps or eluting pumps. Compare that running average to a history of that pump in each system and determine whether or not deviation exists that would warrant shutdown.
Compare each newly collected sample to the running average for that pump for the previous run. Generate offset and correlation data for that newly collected sample. Determine whether or not the generated offset and correlation values are within acceptable limits.
Compare each newly collected sample to the running average for that pump type for previously run samples. Generate offset and correlation data for that newly collected sample. Determine whether or not the generated offset and correlation values are within acceptable limits.
If offset and/or correlation vales for that pump are outside of the user selected ranges, suspend sample introduction on that system
If offset and/or correlation values for a given system are outside of the user selected ranges when compared to other chromotography systems (when such other sytems are running the same sample and elution protocol) suspend sample introduction on that system

FIG. 8